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*Vital Statistics: An Introduction to the Science of Demography.* By George Chandler Whipple. New York, John Wiley and Sons, 1919. pp. 517.

The outstanding characteristic of Professor Whipple's book is the effective, simple, and forceful way in which the content, and some of the methods, of vital statistics are explained for the benefit of the public health student and the busy health official. Students of the political sciences have for years had the more comprehensive treatise of the late Professor Richmond Mayo-Smith, "Statistics and Sociology," the works of von Mayr, Westergaard, Grotjahn and Kaup, Lexis and many others to guide them, but, with the exception of Dr. Newsholme's "Vital Statistics," an English publication long unobtainable through American book-sellers, the public health student has had no text for study. \* The lack of such a work may have been responsible for the backward condition until very recently prevailing in the registration and tabular display of vital facts in the United States.

Professor Whipple has wisely discussed his subject in the most elementary manner, and by so doing has made vital statistics attractive to the registrationists and to others in public office who control the collection of the basic facts and the ensuing crude tabulations. These form the building materials out of which the professional analyst, the statistician, erects his structures of induction, and of hypothesis and deduction for the guidance of the statesman. It is not difficult to write a textbook on vital statistics in the necessarily involved philosophical language of interpretive statistics. Professor Whipple could have done that, no doubt; but it would not have filled the need of the hour in vital statistics; he would not have brought home to the ever-increasing number of local registrars the elementary, indispensable criteria of crude descriptive vital statistics. Professor Whipple chose the more difficult task of discussing "first things first."

The first chapter is devoted to a brief history of statistics and of vital statistics, to the uses of crude descriptive data in health administration, and to an elementary discussion of the place of logic in statistics. The two following chapters give practical hints on office technique,—tallying, hand and machine tabulation, table structure, computation of ratios, the use of logarithms and the slide-rule, the seriation of data, and graphic methods.

Enumeration and registration requirements for population statistics, and for births, marriages, divorces and sickness are taken up in Chapter IV. The chief descriptive details of population structure are discussed, and this is followed by two chapters on crude and specific death rates, birth rates, marriage and divorce rates. The nomenclature and classification of diseases causing death are briefly outlined in Chapter VIII. Further comment is given in Chapters X and XI on the crude statistics of mortality from principal diseases and at the several age-divisions of life. A general description of life tables is to be found in Chapter XIV. For methods of computing these tables the student is referred, however, to other works, perhaps inaccessible to the public health official. This is to be regretted because there are elementary methods of compiling abridged life tables,—the Farr method, for instance, which could have been described. The explanation of osculatory interpolation as given by Mr. Burn in his "Vital Statistics Explained" is well within the comprehension of the local registrar who may wish to prepare a life table to show the results of health work.

It is doubtful whether the chapters on "Probability" and "Correlation" should have been included in this elementary work, because it is extremely difficult to teach these subjects to beginners in statistics with any certainty that the methods will not be misunderstood and, consequently, misapplied. This is true especially of measurements of contingency and correlation. As one experienced mathematical analyst has

remarked: "Mathematical methods when used by the non-mathematical statistician are as dangerous as a razor in the hands of an infant." The unfinished state of the theory of correlation, the fact that the teaching of the so-called theory of probabilities has not advanced in most of our universities beyond the elements as given in the average high-school or college algebra, the slight attention paid to mathematical-statistical logic in the United States, are sufficient reasons why the newly-introduced student should not be given an opportunity to confound himself with rule-of-thumb "statistical methods." On page 411, Professor Whipple says: "The student will find the use of the coefficient of correlation an admirable weapon for exploding false theories," and as an example, states that a coefficient of correlation of 0.54 between a series of grippe outbreaks in one year and of measles epidemics the next year, is "low correlation." He says: "It follows, therefore, that the statement that grippe is followed by measles a year later has little to substantiate it, if all the facts are considered." A coefficient of 0.54 is by no means "low."

Furthermore, the "correlation" was made from records of only 123 and 184 deaths in the two series, respectively, arranged in twelve pairs and for the state of Connecticut. Would it not have been better to show the need for more data by attaching the "probable error" of this particular coefficient 0.54? Then, again, would it not have been wise to ask for a tabulation of both grippe and measles facts by months instead of by calendar years, over a wider area so that the true periodicity of these diseases could have been shown? Epidemics do not respect artificial calendar year limits. It is not clear why the simpler method of "grade" or "rank" correlation (Spearman's method) was overlooked. Unless the student or public health official or statistician has been disciplined by a sound training and much experience in the basic mathematical studies and in higher statistical analytics and logic, he had better not undertake to support or explode theories of disease relationship and causality. It is much the wiser course to draw extremely reserved, common-sense conclusions from inspection of the crude data, leaving the testing, graduation and logical analysis to the professional statistician.

E. W. KOFF.

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*Decennial Census of the Commonwealth of Massachusetts, 1915.* Taken under the direction of Charles F. Gettemy, Director of the Massachusetts Bureau of Statistics. Boston, Wright and Potter, 1918. Pp. ix+749, with map.

Massachusetts, in successfully taking a census of the population and principal material resources of the Commonwealth in a manner which merits the confidence of the student in the political and social sciences has again succeeded in doing something that no other American state has ever done. It would be idle to designate the states which in 1915 and in prior years failed more or less conspicuously in this important function of government. We can only hope that a sufficient number of the members of this Association in the several states, other than Massachusetts, will take the trouble to inquire, first, why there is no provision for taking an inventory of the human resources of their particular states at times midway between the federal enumerations, and, second, in case there is constitutional or sporadic legislative provision for a state census, why the methods of enumeration and general organization are so grossly defective, and why the published results are inadequate to meet the most elementary needs of state government. A state government cannot afford to fail to provide students of its problems with the most rudimentary facts as to the size of the population and its composition as to citizenship, nativity, color or race, sex, age, civil condition and occupation.